**Geometry – Finding Perimeters **

**NGSSS:** MA.6.G.4.2

Find the perimeters of composite, two-dimensional figures, including non-rectangular figures using various strategies.

**Goals/Objectives:** At the completion of this assignment, students should be able find the perimeter of a given shape. They should be able to understand what “perimeter” is, and why it is significant. Students will also be able to find objects on their own, without given dimensions, and determine the perimeter.

**Prior Knowledge:** Students must be able to correctly identify different shapes. They also need to have basic addition and multiplication skills. Students also need to be able to use measuring tools, such as a ruler, to find dimensions of objects.

**Materials:**

* Overhead projector
* Individual white boards for students with markers
* Individual rulers
* Classroom objects for measuring (with additional objects of various shapes being included for activity)
* Handouts for visual or hearing impaired students, with larger font and written instructions

**Model of Instruction:** Large Group Instruction and Cooperative Learning

**Co-Teaching Model:** The lesson will use the strategy of one teacher teaches, and one teacher assists. Teacher one, or the content teacher, will give the lesson, instructions, and demonstrations. Teacher two, or the ESE teacher, will serve as aide to any student who appears to be struggling. Teacher two will have the responsibility of working individually with any student who does not appear to be grasping the information as teacher one teaches it.

**Motivation:** The teachers will let the students know that the concept of perimeter has frequent usage in real-life settings. The teacher will use different examples to relate to a wider range of students. One example could be that a basketball team needs to know the perimeter of their court, so they can know how long each set of bleachers need to be. Another example could be that if you are planting a garden, you need to know the perimeter of your garden so that you can know how much fence to buy to put around it. It will be important to find an example that relates to the specific class in order to motivate effectively.

**Lesson procedures:**

**Lesson Introduction/Guided Practice:**

1. Set up
2. Students will be asked to sit at their desk and watch the overhead projector.
3. Each student will be given a whiteboard (dry-erase) for future use.
4. Content Teacher will ask questions to introduce the lesson.
5. What do you already know about perimeter?
6. When and how can you use perimeter in your life?
7. Why do you think it is important to learn about perimeter?
8. Can you think of a job/profession where perimeter would be frequently used?
9. Instruction
10. Introduce the concept of perimeter as the distance around an object or space
11. Beginning with rectangles, give demonstration of how to solve perimeter
12. Introduce the concept of parallel sides being of equal length and the formula 2l+2w=p
13. Once students have understanding of rectangles, and activity has been completed, move on to non-rectangular figures where all sides will need to be added up
14. Activity
15. After the instruction for rectangles, students will practice at their desk
16. Students will solve a problem given on the overhead, on their personal whiteboard
17. When finished, students will hold up their whiteboard facing the front and the teachers, keeping a level of secrecy to their answer
18. Both teachers will check for successful completion
19. When teachers feel class is ready, and after the instruction on non-rectangles, students will complete practice problems in same format with non-rectangles
20. Role of Co-Teacher
21. During initial instruction, ESE teacher will walk the room and look for any students who either ask for help, or appear to be struggling with concepts
22. When students are doing practice problems on their whiteboards, ESE teacher will be looking for students who are not coming up with correct answers and assisting them with problems
23. ESE Teacher will serve as aide/assistant to students during this portion of the lesson

**Independent Practice:**

1. Setup
2. Students will be seated at their desks
3. Students will have individual whiteboards
4. Students will have rulers
5. Students will be assigned a partner to work with
6. Instruction
7. Content Teacher will tell students that they will now be practicing finding perimeter when dimensions are not provided
8. Content Teacher will explain that students are using the centimeters on their ruler, and make sure each student knows where they are
9. Students will be instructed to write down dimensions on their whiteboard and their answer for perimeter, with their partner
10. Lesson will begin with practice of measuring your individual desk
11. Once understood, will progress to activity
12. Activity
13. Students will begin by measuring their own desk and writing their dimensions and answers on their whiteboard
14. Once the concept seems to be understood, students will go out with a partner and find a rectangle to measure and solve its perimeter
15. When completed, students will bring work to the content teacher to check
16. After a few tries with rectangles, activity will progress to finding non-rectangular shapes
17. After completion, students will again bring work to the content teacher to check
18. Role of Co-Teacher
19. During initial desk measurements, ESE teacher will walk around room and make sure every student understands what they are doing and how to do it
20. ESE Teacher will make sure no student is having problems with the rulers
21. ESE Teacher will also walk around the room and make sure everyone is on task and finding the correct shapes to measure and solve for
22. If one particular student is having a lot of trouble with perimeter and the assignment, ESE teacher could serve as that students partner for activity
23. ESE Teacher will again be serving as an aide/assistant to the students during this activity

**Extensions:** When finished with the activities, students can go on the website “BrainPOP.com”, and watch a video on geometry and perimeters. Students will also visit the website “Funbrain.com” to practice more problems on perimeter. The website is setup to have different levels of difficulty for the questions. There is “easy”, “medium”, “hard”, and “super brain”. This will be a beneficial tool, because it will allow each student to work at their own pace, and work at a level where they feel comfortable.

http://www.brainpop.com/math/geometryandmeasurement/

http://www.funbrain.com/poly/index.html

**Assessment:** The assessment for this lesson will be conducted in a few different ways. The teachers will initially gage the knowledge of the class by asking questions and using verbal discussions. Assessment will also be made during the guided practice, when students complete practice problems on their whiteboards. The teachers will check for right or wrong answers and be able to tell which students understand and which need additional help. In a similar fashion, teachers will check for right and wrong answers during the independent activity, where students measure their own shapes. It will be important for the co-teachers to communicate with each other throughout the entire lesson. If the ESE teacher notices that a number of students are having trouble with what they were just taught, then that teacher needs to communicate with the content teacher to either slow down, or go back over certain areas with more detail. The ESE teacher has an important role, since they will be the one out with the students helping and checking for comprehension.

**Accommodations/Modifications:**

1. ESOL
2. Students with weaker communication skills will be paired with students with more advanced communication skills to assist them in assignment completion.
3. Provide Heritage Language dictionaries for students who may need to look up words
4. Use visual demonstrations on overhead, allowing students who may have trouble with language to see instruction. Also make sure these students are seated towards front of class
5. Adaptations
6. Provide an extended period of time for students who will take longer to complete their assignment, either an extension after other students have finished, or have them begin before other students if you know they will require more time
7. Adapt input, and the way that instruction is presented. Use verbal instruction, as well as demonstrations, and in some cases individualized if needed
8. Alternate goals by giving more advanced students a more difficult task, and the struggling students an easier task with the same material. For example, have more advanced students use the formula 2l+2w=p for rectangles, while struggling students just add each side
9. Increase the level of support. If one student is having no trouble with assignment, and answering first few practice problems correctly, they can be assigned to help struggling student with their work
10. Adapt the forms of output. If a student has trouble writing on their whiteboard, they can verbally answer with the ESE teacher who is walking around
11. Size can also be adjusted. If it is taking a student a longer time to come up with answers during the activity, then they can only be required to find one item while other students find three
12. Provide a separate lesson handout with larger font, or a magnifying option for the overhead projector, for visually impaired students. Also place them in front of class, close to screen
13. Access Points
14. **Independent:**

MA.6.G.4.In.b

Measure the distance around all sides (perimeter) of polygons, such as squares, triangles, and hexagons using physical models

1. **Supported:**

MA.6.G.4.Su.b

Measure the lengths of the sides of rectangles and triangles using physical models

1. **Participatory:**

MA.6.G.4.Pa.b

Recognize the outside (perimeter) of rectangles and triangles